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CHILDHOOD ABUSE AND PREMILITARY SEXUAL ASSAULT IN MALE NAVY RECRUITS

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Childhood Abuse and Premilitary Sexual Assault in Male Navy Recruits

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Three samples of male U.S. Navy recruits ($N = 7,850$) were surveyed to determine whether a history of childhood physical abuse (CPA) or childhood sexual abuse (CSA) was predictive of premilitary rape of women and whether these relationships were mediated by alcohol problems and number of sex partners. In the 3 samples, 11.3%, 11.6%, and 9.9% of men reported committing premilitary rape. When demographic factors were controlled for, both CPA and CSA were independently and additively predictive of rape in each sample, with men who experienced both forms of abuse showing the highest risk of committing rape. Additional analyses revealed that alcohol problems and number of sex partners significantly mediated the relationship between childhood abuse (CPA and CSA) and rape perpetration.

The intergenerational transmission of violence hypothesis proposes that childhood abuse can begin a cycle of violence that results in various forms of aggressive behavior. Although they proffer different causal mechanisms, researchers have generally found that victims of violence are more likely than nonvictims to become perpetrators of aggression (e.g., Davis & Leitenberg, 1987; Finkelhor, 1979; Freeman-Longo, 1986). In the present research, we investigated the impact of child physical abuse (CPA) and child sexual abuse (CSA) on men's likelihood of raping women.

Despite evidence (discussed later) that childhood abuse is associated with adult sexual aggression in men, the issue of whether different forms of abuse have common or distinctive effects has not been adequately studied (see, e.g., Trickett & McBride-Chang, 1995). Typically, studies have considered only one form of abuse (e.g., Lewis, Shankok, & Pincus, 1979; Lodico, Gruber, & Di-Clemente, 1996; Rubinstein, Yeager, Goodstein, & Lewis, 1993), have combined CPA and CSA into a single variable (often incorporating other indicators of negative family environment as well; e.g., Koss & Dinero, 1988; Malamuth, Linz, Heavey, Barnes, & Acker, 1995; Malamuth, Sockloskie, Koss, & Tanaka, 1991), or

have assessed the effects of CPA and CSA in separate analyses (e.g., Fehrenbach, Smith, Monastersky, & Deisher, 1986). However, because CPA and CSA tend to co-occur (e.g., Dhawan & Marshall, 1996; Luster & Small, 1997), their distinctive effects can be examined only by analyses that correct for the associations between them.

The first goal of the present study was to examine whether experiencing CPA, CSA, or both is associated with an increased likelihood of raping women and, if so, whether these two types of abuse have redundant, additive, or synergistic effects in predicting rape. The second goal was to examine two factors that may mediate the relationship between childhood abuse and adult sexual aggression: alcohol problems (AP) and number of sexual partners (NSP).

Evidence of a link between childhood abuse and adult sexual assault comes from several sources. Studies have documented high rates of CPA (e.g., Lewis et al., 1979), CSA (e.g., Dhawan & Marshall, 1996; Rubinstein et al., 1993), or both (Bard et al., 1987; Fehrenbach et al., 1986; Haapasalo & Kankkonen, 1997) among sex offenders—rates that are substantially higher than those found in the general population (e.g., Finkelhor & Dziuba-Leatherman, 1994; Hibbard, Ingersoll, & Orr, 1990; Milner, Robertson, & Rogers, 1990; Risin & Koss, 1987; Straus & Gelles, 1986). In addition, in a longitudinal study comparing confirmed victims of CPA, CSA, or child neglect with matched comparison participants, Widom and Ames (1994) found that CPA (but not CSA or child neglect) was predictive of subsequent arrest for sexual assault. In contrast, a survey of male adolescents revealed a significant association between CSA and sexual aggression (Lodico et al., 1996), although CPA was not assessed. Finally, in surveys of college men, those reporting CPA, CSA, or both have reported higher levels of sexual aggression than have nonabused men (Koss & Dinero, 1988; Malamuth et al., 1991, 1995; but see Ouimette & Riggs, 1998). Unfortunately, these studies did not examine the individual contributions of CPA and CSA to the prediction of sexual aggression.

Despite some inconsistencies, research supports an association between childhood abuse and rape perpetration in men. Insofar as

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different methodological approaches have different weaknesses (e.g., nonrepresentative samples in studies using official records to assess child abuse and sexual assault, reliance on self-report measures in student surveys), confidence in this relationship is enhanced by its replication across different types of studies. However, previous studies shed little light on how the effects of CPA and CSA may differ or on how they may combine to influence sexually aggressive behavior. In addition, with few exceptions (e.g., Malamuth et al., 1991, 1995), past research has not examined the intervening processes by which childhood abuse may lead to adult sexual assault.

With respect to whether AP and NSP mediate the relationship between childhood abuse and adult sexual assault, the literature contains some indications that both AP and NSP are associated with increased likelihood of sexual assault. For AP, convicted rapists often exhibit alcohol abuse or dependence (Hillbrand, Foster, & Hirt, 1990), and rapists are often intoxicated at the time of the assault (Abbey, 1991; Crowell & Burgess, 1996; Johnson, Gibson, & Linden, 1978; Koss, Gidycz, & Wisniewski, 1987; Muehlenhard & Linton, 1987). Men who drink may be more likely to commit sexual assaults for a variety of reasons: Alcohol may increase arousal, anger, aggression, and interest in sexual activity (George & Marlatt, 1986; Tedeschi & Felson, 1994); drinking may be used as a rationalization for antisocial behavior; alcohol may increase the likelihood of misperceiving women's sexual intentions (Koss & Gaines, 1993); and alcohol may reduce inhibitions against violence, including sexual violence (Barbaree, Marshall, Yates, & Lightfoot, 1983).

Researchers have found that sex offenders are likely to report large NSP (Kanin, 1984, 1985) and to report earlier sexual experiences than nonsexual offenders (Rubinstein et al., 1993). It has been suggested (e.g., Malamuth et al., 1995) that these relationships may reflect an uncommitted orientation to sexual relationships among sexually aggressive men, as manifested by large NSP, multiple concurrent partners, and many short-term sexual liaisons.

Theoretically, childhood abuse has also been linked to both AP and NSP. Theorists have suggested that both AP and NSP may reflect "acting out" or impulse control difficulties resulting from early traumas or negative family environments (e.g., Malamuth et al., 1995; Ouimette & Riggs, 1998). Abuse victims may turn to alcohol (and other drugs) in an effort to cope with or escape from the abuse and its sequelae (Harrison, Fulkerson, & Beebe, 1997; Widom, Ireland, & Glynn, 1995). It has also been suggested (e.g., Dimock, 1988; Krug, 1989) that CSA may lead to early sexualized behavior or long-term sexual compulsiveness, although no such consequences of CPA have been proposed.

However, investigations of the link between childhood abuse and AP have yielded mixed results. Several cross-sectional studies have documented positive associations between CPA, CSA, or both and alcohol use or abuse (Brown & Anderson, 1991; Clark, Lesnick, & Hegedus, 1997; Garnefsky & Arends, 1998; Harrison et al., 1997; Luster & Small, 1997; Lynskey & Fergusson, 1997). In contrast, longitudinal studies have not confirmed an association between childhood abuse and AP (McCord, 1983; Silverman, Reinherz, & Giaconia, 1996; Widom et al., 1995). Moreover, child abuse rates in alcoholic populations are not dramatically higher than those in the general population (Kroll, Stock, & James, 1985; Schaefer, Sobieraj, & Hollyfield, 1988; Windle, Windle, Scheidt, & Miller, 1995). A recent review concluded that there is "insuf-

ficient evidence on which to base conclusions about relationships between CSA or CPA and alcoholism in males" (Langeland & Hartgers, 1998, p. 345).

Data on the association between childhood abuse and NSP are scarce. Malamuth and his colleagues (Malamuth, Heavey, & Linz, 1993; Malamuth et al., 1991; Malamuth et al., 1995) reported relationships between early risk factors (including CPA, CSA, and family violence) and sexual promiscuity (defined as NSP or age at first intercourse). However, no information was provided about the individual contributions of CPA and CSA to these relationships. More direct evidence is provided by a large survey of Midwestern adolescents in which students who had experienced either CPA or CSA were more likely to have engaged in sexual intercourse than were those with no history of abuse (Perkins, Luster, Villarruel, & Small, 1998).

Finally, there is some evidence in support of the hypothesis that AP and NSP mediate the relation between childhood abuse and sexual assault. In tests of their confluence model of sexual aggression, Malamuth and his colleagues (1991, 1993, 1995) found that early adverse experiences (including CPA and CSA) lead to delinquency, delinquency leads to increased NSP, and increased NSP leads to sexual aggression. Although their model differs from ours in several respects, it suggests that NSP and possibly AP (as a component of delinquency) may mediate the effects of CPA and CSA on rape.

To recapitulate, the present research had two main goals. First, we sought to examine the relationships of CPA and CSA to men's likelihood of rape. By jointly evaluating CPA and CSA, we were able to assess the effects of each type of abuse while controlling for the other, as well as the interactive effects of CPA and CSA in predicting rape. Second, we examined the role of AP and NSP as mediators of the relationship between childhood abuse and rape. To establish the reliability of observed effects, we evaluated these relationships in three large samples of men.

Method

Participants

Three samples of male U.S. Navy recruits voluntarily completed a packet of survey instruments within a week of their arrival at a Navy Recruit Training Command (RTC). Sample 1 ($N = 1,881$) consisted of incoming recruits at the RTC in Orlando, Florida, who participated between January and March of 1994. Samples 2 ($N = 3,044$) and 3 ($N = 2,925$) consisted of incoming recruits at the RTC in Great Lakes, Illinois, who participated between June 1996 and June 1997. Demographic characteristics of the three samples, as well as rates of childhood abuse and adult sexual assault, are summarized in Table 1. Despite differences in the assessment of these variables between Sample 1 and Samples 2 and 3, rates of CPA, CSA, and rape were quite similar across the three samples. Considering each type of childhood abuse separately, 36–39% of respondents reported CPA and 11–12% of respondents reported CSA. With respect to adult sexual assault, 10–12% of respondents reported that they had committed rape and 2–4% reported that they had attempted (but not committed) rape. Because the focus of the study was on rape perpetration, men who reported attempting rape were excluded from subsequent analyses.

Instruments

Demographic questionnaire. This questionnaire solicited information including ethnic background, age, marital status, education, and parents'

Table 1
Demographic Characteristics of Male Recruits

Characteristic	Sample 1	Sample 2	Sample 3
Ethnic background (%)			
White	71.8	64.1	63.9
African American	15.4	15.0	15.9
Hispanic	7.8	11.6	11.6
Asian American	2.6	5.6	5.1
Native American	1.2	1.6	2.0
Other	1.2	2.1	1.5
Age (years)			
<i>M</i>	20.1	19.9	19.7
<i>SD</i>	2.3	2.7	2.5
Marital status (%)			
Single	91.0	88.4	90.9
Married	6.1	6.8	5.4
Cohabiting	1.8	3.4	2.7
Divorced/sep./widowed	1.1	1.4	1.0
Education (%)			
Less than high school	3.8	5.5	4.8
G.E.D.	3.4	4.6	4.4
High school graduate	54.3	80.5	83.6
Some college	38.5	9.4	7.2
Parents' annual income (%)			
Less than \$25,000	35.8	30.9	31.9
\$25,000-\$50,000	42.3	37.8	37.7
More than \$50,000	21.9	31.3	30.4
Child physical abuse (%)	39.4	38.8	36.1
Child sexual abuse (%)	12.1	11.9	10.8
Adult sexual assault (%)			
Rape	11.3	11.6	9.9
Attempted rape	3.6	3.1	2.3

Note. sep. = separated; G.E.D. = general equivalency diploma.

annual income. Of primary interest was an item that asked recruits to indicate the number of opposite-sex partners with whom they had engaged in sexual intercourse. In Sample 1, responses were made on a 9-point scale ranging from 1 (*none*) to 9 (*50 or more*), respectively. In Samples 2 and 3, respondents provided a number between 0 and 50 (where "50" stood for *50 or more*).

Sexual events questionnaire (SEQ). Childhood sexual experiences were assessed with a modified SEQ (Finkelhor, 1979). In Sample 1, respondents indicated whether they had experienced each of ten sexual acts before the age of 14 years. Experiences included three noncontact experiences (e.g., being shown the sex organs of another person) and seven contact experiences, ranging from being fondled in a sexual way to sexual intercourse. Respondents were asked to provide details about their single most extreme sexual experience (frequency and duration, their age, the age and identity of the perpetrator). Men were classified as having experienced CSA only if their most extreme experience involved sexual contact prior to age 14 with someone 5 or more years older. Because respondents provided information only about their single most extreme experience before age 14, it was not possible to determine whether those who reported peer experiences had also engaged in sexual contact with a person 5 or more years their senior. As it was not possible to classify these participants in terms of CSA, those reporting peer experiences before the age of 14 ($N = 484$, 25.7%) were excluded from subsequent analyses. The comparison group thus consisted only of those who reported no sexual contact prior to age 14.

In Samples 2 and 3, respondents were asked if, before the age of 18 years, they had experienced sexual contact (e.g., kissing, touching, oral, anal, or vaginal intercourse) with a family member or with a nonfamily member who was at least 5 years older. To avoid the ambiguities we encountered in classifying CSA victims in Sample 1, respondents in

Samples 2 and 3 were asked to provide details about each sexual experience they reported. As before, men were classified as having experienced CSA only if they reported sexual contact prior to the age of 14 with someone 5 or more years older. The no-CSA comparison group consisted of men who reported no sexual experiences involving physical contact prior to age 14, as well as those who reported only sexual contact with peers prior to age 14.

Conflict Tactics Scale—Parent-Child (CTS-PC) version. We used the CTS-PC Form R (Straus, 1990) to assess whether respondents had been physically abused by their parents. The CTS-PC contains 19 items, each representing a technique that parents might use to resolve conflicts with a child. Respondents were asked to indicate how frequently their parents or stepparents had used each tactic during the worst year of the respondent's life before age 18 on a 7-point scale ranging from 0 (*never*) to 20+ (*more than 20 times*). The scale completed by Sample 1 contained 6 items representing severe or very severe physical violence; the scale completed by Samples 2 and 3 contained 1 additional item (choking).¹ Respondents were classified as having experienced CPA if they reported any of the severe or very severe forms of violence. Those who reported neither severe nor very severe forms of parental violence composed the no-CPA group.

Michigan Alcoholism Screening Test (MAST). Scores on the MAST are computed as a weighted sum of responses to 24 yes-no items that assess alcohol-related problems (Selzer, 1971). In the present study, 2 items that asked the respondent whether he was considered (by himself and by others) a "normal drinker" were deleted. Previous research (Alexander & Mangelsdorff, 1994) has shown that these items, because of their ambiguity, tend to produce erroneously high MAST scores. Thus, MAST scores were computed by using 22 scale items. Respondents who indicated that they had never consumed alcohol were assigned a MAST score of 0. Previous research has documented the validity and reliability of the MAST (for a review, see Storgaard, Nielsen, & Gluud, 1994). In the present study, the 22-item MAST yielded internal consistency estimates of .76, .78, and .76 for the three samples.

Sexual Experiences Survey (SES). The SES, our measure of sexual aggression, presents respondents with descriptions of sexually coercive or aggressive behaviors and asks them to indicate the frequency with which they have engaged in each act since their 14th birthday (Koss & Gidycz, 1985; Koss & Oros, 1982). Research has documented that the SES has satisfactory levels of internal consistency and test-retest reliability (Koss & Oros, 1982). In Sample 1, recruits were asked to indicate how often they had engaged in each of 10 sexually aggressive acts (a) in the past year and (b) since they were 14 years old (0 = *never*, 4 = *often*). Three of these items assessed rape commission ("Had sexual intercourse with a woman when she didn't want to by threatening to use force," "Had sexual intercourse with a woman when she didn't want to be using some degree of force," "Had sexual intercourse with a woman when she didn't want to by giving her more alcohol or drugs than she could handle"). Three parallel items assessed attempted rape, and four items described lower levels of coercive or unwanted sexual behavior (e.g., sexual touching).

A slightly different form of the SES was used in Samples 2 and 3. Respondents in these samples indicated how often they had engaged in each of ten sexually aggressive behaviors (a) between the ages of 14 and 18 years, and (b) since their 18th birthdays (0 = *never*, 10 = *10 or more times*). Three items assessed rape ("Have you made a female have sexual intercourse—putting all or part of your penis in her vagina even if you didn't ejaculate or come—by using some degree of force or threatening to harm her [by giving her alcohol or drugs or getting her high or drunk]?," "Have you made a female do other sexual things like anal sex, oral sex, or

¹ In Samples 2 and 3, we computed correlations between physical abuse scores based on (a) all items and (b) all items except the "choking" item. These correlations were extremely high ($r = .99$ in both samples), supporting the inclusion of this item in classifying victims of CPA.

putting fingers or objects inside her or you by using some degree of force or threatening to harm her?"). Two items assessed attempted rape and five items assessed coercive or unwanted sexual behavior. In each sample, on the basis of the most extreme sexual aggression reported, respondents were classified as having (a) committed rape, (b) attempted rape, or (c) engaged in either no sexual aggression or in only the less serious forms of sexual aggression.

Procedure

The surveys used in the present study were part of a more extensive battery of questionnaires administered to Navy recruits in a classroom during their first week at the RTC. After recruits were provided with a brief verbal description of the study, their voluntary participation was requested. Recruits were provided with a Privacy Act statement and an informed consent form. Respondents were told that they were free to leave blank any section or questions that they desired, that they could stop their participation at any time, that a decision not to participate would have no negative consequences for them, and that professional counseling would be provided on request if the recall of past experiences caused distress.

Respondents in Samples 1 and 2 completed the questionnaire under anonymous conditions; the consent form completed by respondents in these samples described the procedures used to ensure anonymity. In contrast, because they were asked to participate in follow-up surveys at a later date, respondents in Sample 3 were informed that their responses would be completely confidential but that they would not be anonymous.

Results

Analytic Strategy

Because of the advantage in statistical power conveyed by our large samples, we conducted all tests by using $\alpha = .01$. We tested most predictions using logistic regression and multiple regression analyses. Because both CPA and CSA victims were found to differ from nonvictims with respect to several demographic characteristics, age, education, ethnicity, family income, and marital status were entered on the first step of each analysis (after first dummy coding as necessary). This represents a conservative strategy, because not all of these variables differed as a function of all three predictor or in all three samples.² Variations in sample size because of missing data on specific measures are reflected in the *N*s reported in each table.

Relations Between CPA and CSA

We first examined whether CPA and CSA tended to co-occur. To this end, we conducted hierarchical logistic regression analyses predicting CPA from CSA. As described earlier, demographic variables were entered as predictors on the first step, and CSA was entered on the second step. In each sample, CSA was a significant predictor of CPA after controlling for demographic differences, incremental χ^2 s(1) = 8.26, 29.82, and 16.46, respectively, with *N*s of 1,147, 1,883, and 2,118, respectively, and *p*s < .005. Examination of the odds ratios (ORs) in each sample indicated that men who had experienced CSA were approximately two times as likely to have experienced CPA as were men with no history of CSA (ORs = 1.69, 2.22, and 1.79, respectively).³ The 99% confidence intervals (CI) for these ORs (Sample 1: 1.06–2.69; Sample 2: 1.52–3.24; Sample 3: 1.24–2.58) overlap, indicating that the magnitude of the relation between CPA and CSA did not differ across samples.

Effects of Childhood Abuse on Adult Rape

Our next set of analyses examined the hypothesis that both CPA and CSA would be associated with adult rape. CPA and CSA were entered simultaneously as predictors of rape in a logistic regression model in which demographic characteristics had been entered on the first step. As shown in Table 2, in all three samples the addition of CPA and CSA resulted in a significant improvement in the model. An examination of the regression weights revealed that CPA was a significant predictor of rape in all three samples, whereas CSA was a significant predictor only in Samples 2 and 3 (although it approached significance in Sample 1, $p < .04$). ORs for CPA and CSA were similar in magnitude, ranging from 2.03 to 2.28 for CPA and from 1.77 to 2.46 for CSA. Estimates of the effects of CPA and CSA were homogeneous within and between samples, as indicated by their overlapping CIs.

To examine whether the combined effects of CPA and CSA on the likelihood of rape commission were greater than would be expected on the basis of the individual effects of each type of childhood abuse, we entered the interaction of CPA and CSA on the third step of the logistic regression (following the demographic variables on Step 1 and the CPA and CSA variables on Step 2). Although the interaction approached significance in Sample 3, it was not significant in Samples 1 or 2. Collectively, these results suggest that the effects of CPA and CSA on rape are additive. That is, the increase in likelihood of rape for CPA and CSA victims is roughly predictable as the sum of the increased likelihood associated with each type of abuse.

This pattern can be seen more clearly in Figure 1, which presents rape rates as a function of abuse history (none [NA], CPA only, CSA only, or both CPA and CSA). In each sample, rape was least frequently committed by those who had experienced no childhood abuse (6–7%) and most frequently committed by those who had experienced both CPA and CSA (23–32%); rates were intermediate for those who had experienced only one form of abuse (9–16%). Men who had experienced CPA only were approximately twice as likely as NA men to commit rape: OR (CI) = 2.50 (1.39–4.49), 2.28 (1.47–3.56), and 1.77 (1.15–2.72) for the three samples. The fact that none of the 99% CIs contained 1.0 indicates that this difference was significant in all three samples. Similarly, men who had experienced CSA only were approximately twice as likely as NA men to commit rape: OR (CI) = 2.23 (0.78–6.34), 2.91 (1.25–6.75), and 1.50 (0.62–3.61) for the three samples. However, this difference was significant

² We conducted preliminary analyses to examine possible demographic differences between abuse (CPA and CSA) victims and nonvictims, as well as between rapists and nonrapists. Although a number of significant or marginally significant differences emerged in one or two of the samples, in only two cases did a demographic factor significantly differentiate groups across all three samples: Ethnicity was a significant predictor of both CPA and CSA in all three samples. For CPA, Whites reported lower rates than African Americans, Asian Americans, or Hispanics. For CSA, African Americans reported the highest rates, Asian Americans reported the lowest rates, and Whites and Hispanics were intermediate. A complete summary of demographic differences is available from Lex L. Merrill on request.

³ As we were interested in correlation, the designation of CPA as the criterion and CSA as the predictor was completely arbitrary. Reversing the roles of these variables produced essentially identical results.

Table 2
*Hierarchical Logistic Regression Analyses Predicting
 Premilitary Rape From CPA and CSA*

Variable	Sample 1 (<i>n</i> = 1,147)	Sample 2 (<i>n</i> = 1,883)	Sample 3 (<i>n</i> = 2,118)
χ^2_{change}			
Step 1 (demographics)	27.32†	27.09†	13.75
Step 2 (CPA, CSA)	22.14**	44.41**	45.12**
Step 3 (CPA × CSA)	0.26	0.39	4.01*
Regression weights (Step 2)			
CPA			
<i>b</i>	0.82**	0.79**	0.71**
<i>SE</i>	0.20	0.16	0.15
OR	2.28	2.20	2.03
99% CI	1.35–3.87	1.47–3.29	1.38–2.99
CSA			
<i>b</i>	0.57	0.76**	0.90**
<i>SE</i>	0.27	0.20	0.19
OR	1.77	2.14	2.46
99% CI	0.89–3.52	1.28–3.58	1.49–4.06

Note. CPA = childhood physical abuse; CSA = childhood sexual abuse; OR = odds ratio; CI = confidence interval.
 † $p < .05$. ** $p < .001$.

only in Sample 2. Finally, men who had experienced both CPA and CSA were four to six times more likely to commit rape than NA men: OR (CI) = 3.63 (1.41–9.32), 5.08 (2.57–10.03), and 6.52 (3.41–12.46) for the three samples. For each type of abuse, esti-

mates of the extent to which abuse increased the likelihood of rape were homogeneous across samples (as indicated by overlapping CIs).

Mediational Analyses

The next set of analyses examined two potential mediators (AP and NSP) of the relationship between CPA and CSA and increased likelihood of rape. Having already established that childhood abuse is related to the likelihood of adult rape, it has been argued that three additional steps are necessary to make a case for mediation (Baron & Kenny, 1986; Holmbeck, 1997). First, it must be shown that childhood abuse predicts AP and NSP. Second, it must be demonstrated that AP and NSP predict rape. Finally, it is necessary to show that the relationship between childhood abuse and rape perpetration is eliminated or attenuated when the effects of AP and NSP have been controlled.

To examine whether childhood abuse was associated with AP and NSP, we conducted separate hierarchical multiple regression analyses with AP and NSP as the criterion variables. Because AP and NSP exhibited positive skew, they were log transformed. As in previous analyses, demographic variables were entered on the first step, CPA and CSA were entered on the second step, and the CPA × CSA interaction was entered on the third step.

Table 3 presents the results of the analysis for AP, and Table 4 presents the results for NSP. As can be seen in the tables, the addition of CPA and CSA significantly increased the percentage of

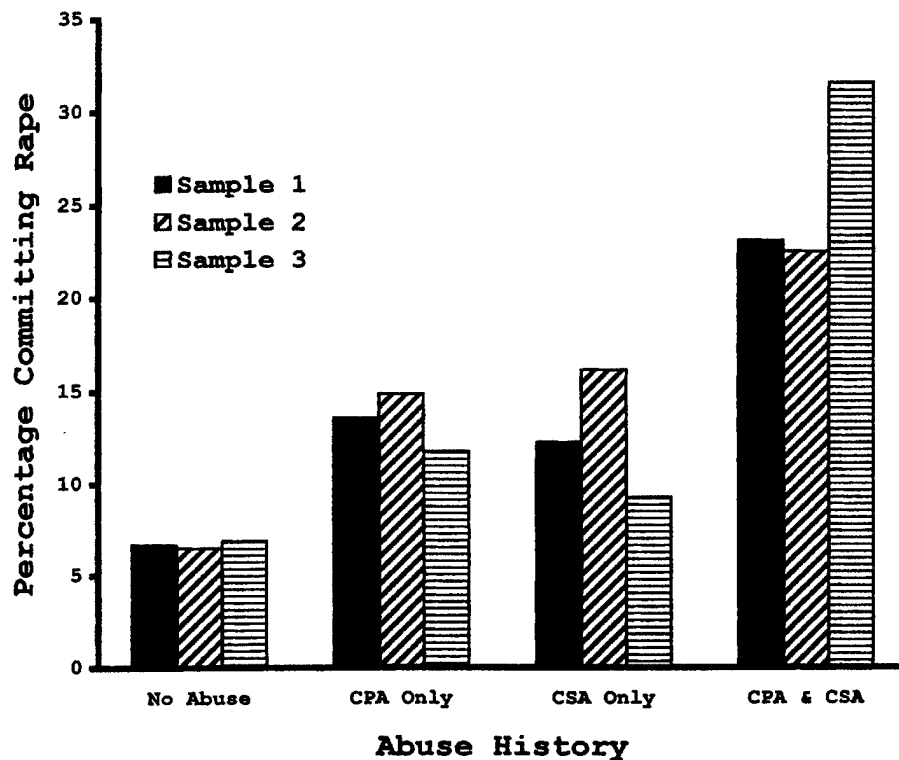


Figure 1. Percentage of men reporting rape perpetration as a function of childhood abuse history. CPA = childhood physical abuse; CSA = childhood sexual abuse.

Table 3
Multiple Regression Predicting Alcohol Problems
From CPA and CSA

Variable	Sample 1 (n = 1,219)	Sample 2 (n = 1,992)	Sample 3 (n = 2,179)
R^2_{change}			
Step 1 (demographics)	.062**	.059**	.051**
Step 2 (CPA, CSA)	.027**	.030**	.038**
Step 3 (CPA \times CSA)	.001	.000	.000
Regression weights (Step 2)			
CPA			
b	.103**	.123**	.109**
SE	.026	.019	.018
99% CI	.036-.170	.074-.172	.063-.155
CSA			
b	.153**	.118**	.192**
SE	.038	.030	.029
99% CI	.055-.251	.041-.195	.117-.267

Note. CPA = childhood physical abuse; CSA = childhood sexual abuse; CI = confidence interval.

** $p < .001$.

explained variance in both AP and NSP across all three samples, whereas the addition of the interaction term did not. For AP, regression coefficients for CPA and CSA were significant in all three samples. Moreover, CPA and CSA were predictive of alcohol problems to a similar extent (as indicated by overlapping CIs for the regression weights for CPA and CSA within each sample). In contrast, for NSP, CSA was a consistently stronger predictor than CPA (as indicated by the nonoverlapping CIs). In addition, whereas CPA was a significant predictor in two of three samples, CSA was a significant predictor in all three samples.

To examine whether AP and NSP were associated with adult rape, we conducted logistic regression analyses in which AP and NSP were entered as predictors on the second step (after entering the demographic control variables). As can be seen in Table 5, both AP and NSP predicted rape perpetration.

Table 4
Multiple Regression Predicting Number of Sex Partners
From CPA and CSA

Variable	Sample 1 (n = 1,238)	Sample 2 (n = 2,030)	Sample 3 (n = 2,237)
R^2_{change}			
Step 1 (demographics)	.062**	.159**	.149**
Step 2 (CPA, CSA)	.034**	.047**	.056**
Step 3 (CPA \times CSA)	.000	.000	.000
Regression weights (Step 2)			
CPA			
b	.037	.068**	.061*
SE	.016	.019	.018
99% CI	-.004-.078	.019-.117	.015-.107
CSA			
b	.143**	.289**	.328**
SE	.023	.029	.028
99% CI	.084-.202	.214-.364	.256-.400

Note. CPA = childhood physical abuse; CSA = childhood sexual abuse; CI = confidence interval.

* $p < .01$. ** $p < .001$.

Table 5
Logistic Regression Predicting Rape From Alcohol Problems
(AP) and Number of Sex Partners (NSP)

Variable	Sample 1 (n = 1,594)	Sample 2 (n = 2,145)	Sample 3 (n = 2,370)
χ^2_{change}			
Step 1 (demographics)	20.36	30.97*	20.84
Step 2 (AP, NSP)	196.60**	314.76**	212.16**
Regression weights (Step 2)			
AP			
b	2.49**	2.02**	1.75**
SE	0.23	0.20	0.19
99% CI	1.90-3.07	1.50-2.54	1.25-2.24
NSP			
b	1.39**	1.91**	1.44**
SE	0.37	0.20	0.19
99% CI	0.44-2.33	1.39-2.43	0.95-1.94

Note. AP = alcohol problems; NSP = number of sex partners; CI = confidence interval.

* $p < .01$. ** $p < .001$.

Thus far, we have established that childhood abuse is associated with the proposed mediators (AP and NSP) and adult rape and that the proposed mediators are associated with rape. As the final step in establishing mediation, we examined whether the relation between childhood abuse and adult rape would be eliminated or attenuated when the mediators were controlled. To this end, we entered the demographic variables on Step 1, the mediators (AP and NSP) on Step 2, and the childhood abuse variables (CPA and CSA) on Step 3 of a hierarchical logistic regression, with rape as the criterion variable. The results of these analyses are presented in Table 6.

Consistent with previous analyses, AP and NSP were both significant predictors of rape across all three samples. The addition of CPA and CSA to the model resulted in significant improvement in Sample 2 (and approached significance in Samples 1 and 3,

Table 6
Logistic Regression Model Predicting Premilitary Rape From
CPA and CSA, Controlling for AP and NSP

Variable	Sample 1 (n = 1,122)	Sample 2 (n = 1,776)	Sample 3 (n = 2,003)
χ^2_{change}			
Step 1 (demographics)	26.22	28.99*	13.29
Step 2 (AP, NSP)	152.22**	226.89**	202.84**
Step 3 (CPA, CSA)	6.72	9.95*	7.74
Regression weights (Step 3)			
CPA			
b	0.60*	0.53*	0.43*
SE	0.23	0.17	0.16
99% CI	0.00-1.19	0.08-0.97	0.00-0.85
CSA			
b	-0.02	0.11	0.20
SE	0.31	0.23	0.22
99% CI	-0.83-0.79	-0.48-0.71	-0.38-0.77

Note. CPA = childhood physical abuse; CSA = childhood sexual abuse; AP = alcohol problems; and NSP = number of sex partners; CI = confidence interval.

* $p < .01$. ** $p < .001$.

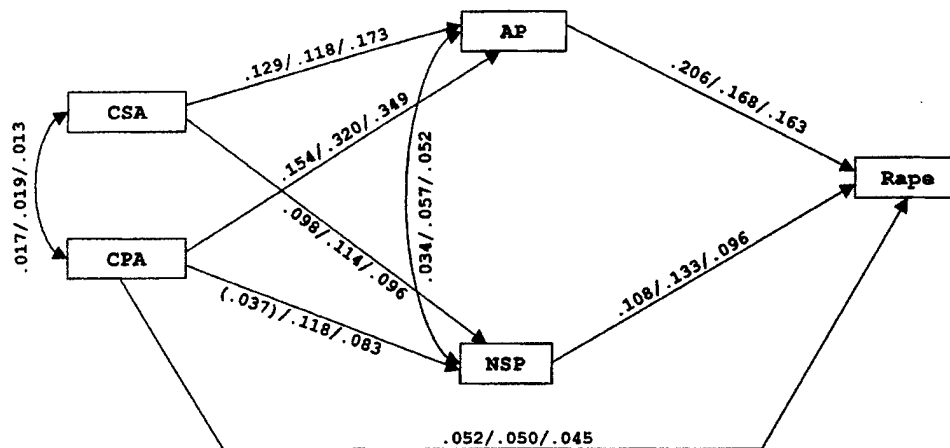


Figure 2. Path analysis of the relationship between childhood abuse, alcohol problems, number of sex partners, and rape perpetration. Numbers on each path are the standardized path coefficients for each of the three samples. All coefficients were statistically significant ($\alpha = .01$), except for the path from childhood physical abuse (CPA) to number of sexual partners (NSP) in Sample 1. CSA = childhood sexual abuse; AP = alcohol problems.

$ps < .04$). An examination of the regression coefficients reveals that CSA was no longer a significant predictor of rape after the mediators had been controlled. Compared with the ORs for CSA reported in Table 2 (1.77, 2.14, and 2.46), the ORs after controlling for the mediators dropped to 0.98, 1.12, and 1.22. This indicates that the effects of CSA on rape were largely mediated by AP and NSP. In contrast, CPA remained a significant predictor of rape after controlling for the mediators. Nonetheless, the predictive power of CPA was reduced when the two mediators were controlled; the ORs for CPA dropped from 2.28, 2.20, and 2.03 in our previous analysis (see Table 2) to 1.82, 1.69, and 1.53 when AP and NSP were included in the model. This indicates that the relationship between CPA and adult rape perpetration was only partially mediated by AP and NSP.

As an additional check on the mediational model, we conducted path analyses using LISREL 8 (Jöreskog & Sörbom, 1993). We did not rely on path analysis as our primary analytic strategy because of the nature of our data (e.g., dichotomous variables) and because it would be unwieldy to incorporate our numerous demographic controls within a path-analytic framework. However, because path analysis solves the set of equations represented by a model simultaneously, because it is associated with various indices of model fit, and because it provides indices of effect size, these analyses provide complementary information regarding the adequacy of our model.

The initial model tested on each sample included CPA and CSA as exogenous (causal) factors, AP and NSP as mediators, and rape as the dependent variable. In addition to indirect effects of CPA and CSA on rape (mediated through AP and NSP), the model included direct effects of CPA and CSA on rape. On the basis of preliminary assessments of the initial model, we made two changes that resulted in a good fit across all three samples. First, consistent with the results of our regression analyses, the direct path from CSA to rape was dropped. Second, the errors of the AP and NSP variables were allowed to correlate. This suggests that these two variables share common causes that are not contained in our model.

Across samples, all indices indicated a good fit of the trimmed model. That is, none of the chi-square goodness of fit tests were significant, $\chi^2 = 2.03, 0.98$, and 4.60 , $Ns = 1,318, 1,671$, and $1,683$, respectively, $ps > .03$, all of the goodness of fit indices (GFI) and the nonnormed fit indices (NNFI) were greater than .90 (GFIs = .999, 1.00, .999; NNFI = .971, 1.00, .943), and all of the root mean square errors of approximation (RMSEA) were less than .05 (RMSEAs = .03, .00, and .04). The unstandardized path coefficients for all three samples are provided in Figure 2. Except for the path from CPA to NSP in Sample 1, all coefficients were significant ($p < .01$). Across the three samples, CPA and CSA accounted for 2–3% of the variance in AP ($R^2 = .023, .027$, & $.031$) and 4–7% of the variance in NSP ($R^2 = .040, .070$, & $.068$). Together, the set of predictors accounted for 10–14% of the variance in rape ($R^2 = .134, .136$, & $.103$).⁴

Finally, because some rape models (Marshall & Barbaree, 1990) suggest that men's vulnerability to commit sexual assault may interact with situational factors, such as intoxication, to predict rape, we also conducted moderational analyses. These analyses test whether alcohol use and high levels of sexual activity are differentially predictive of sexual assault for men with different abuse histories. In an additional set of logistic regression analyses predicting rape, we entered the demographic variables on the first step and the four predictor variables (CPA, CSA, AP, and NSP) on the second step. On the succeeding three steps we entered the 6 two-way, 4 three-way, and 1 four-way interactions among the predictors. Moderation would be indicated by significant interactions involving CPA, CSA, or both, on one hand, and AP, NSP, or

⁴ We also examined two alternative path models. The first posited direct effects of CPA and CSA on AP, NSP, and rape, with no mediation. In the second, following Malamuth and his colleagues (1991, 1995), CPA and CSA were proposed to influence AP, AP was proposed to influence NSP, and NSP was proposed to influence rape. In neither case did these alternative models provide acceptable fits to the data, further bolstering our confidence in the mediational model described in the text.

both, on the other. Of the 33 interaction effects tested (11 interactions in each of the three samples), only 1 was statistically significant ($\alpha = .01$): the interaction between AP and NSP in Sample 1. Given that the 1 significant interaction did not involve childhood abuse, and given that no interactions replicated across all three samples, there is little evidence that abuse history moderates the relationship of AP and NSP to rape.

Discussion

The present study had two main goals. The first was to examine the independent and joint effects of CPA and CSA on men's rape of women. The second was to explore whether AP and NSP mediate the effects of childhood abuse on rape. Although previous studies have provided evidence of an association between childhood abuse and men's rape of women (Becker, Kaplan, Tenke, & Tartaglino, 1991; Malamuth et al., 1995), our study was the first to test the effects of each type of abuse while controlling for the other. The significant association between CPA and CSA highlights the importance of simultaneously considering the effects of different forms of abuse on victims.

Our results were clear and consistent in documenting that men who experienced either CPA or CSA were more likely than nonabused men to commit rape. Each type of childhood abuse was independently associated with later rape and to a similar extent; the occurrence of each type of abuse (while we statistically controlled for the other type of abuse as well as demographic factors) was associated with an approximately 200% increase in the likelihood of rape. However, because of differences in how the two types of abuse were assessed and because of the difficulty of equating the two forms of abuse in terms of their severity, direct comparisons of the magnitude of the effects of each type of abuse on rape must be viewed as tentative.

The present study represents the first attempt to determine whether the effects of CPA and CSA on rape are additive or interactive. We found little evidence of an interactive effect. Instead, each form of abuse incrementally increased the likelihood of rape. Thus, men who had experienced both forms of abuse, relative to nonabused men, were 400–600% more likely to commit rape. In the context of the intergenerational transmission of violence hypothesis, the present results contribute to a burgeoning literature that suggests that childhood abuse may precipitate a cycle of violence that is later manifested in various forms of adult aggression, including rape. However, it is important to note that our correlation data do not allow for causal conclusions. It remains possible that, rather than childhood abuse causing increased likelihood of rape, some third variable (e.g., genetic factors) is responsible for both childhood abuse victimization and rape perpetration.

The present study also provides evidence regarding the effects of childhood abuse on adult behaviors other than sexual assault. Both AP and NSP were more common among men who had experienced CPA or CSA than they were among nonabused men, and in neither case was there evidence for an interactive effect of combined abuse. One explanation for these effects is that children who have been victimized tend to become involved with deviant subcultures in which high levels of alcohol use and sexual activity are normative. However, although CPA and CSA were equally predictive of AP, CSA emerged as a stronger predictor of NSP. This suggests that CSA may also have specific effects on later

sexual behavior, beyond the common effects of CPA and CSA in increasing delinquency. We also documented significant associations between both AP and NSP and rape that are consistent with reports that male rapists exhibit more AP (Hillbrand et al., 1990; Koss et al., 1987) and have higher NSP (Kanin, 1985; Koss & Dinero, 1988) than do nonrapists.

The second major contribution of this study was our test of a model in which the effects of CPA and CSA on rape are mediated through AP and NSP. Using both logistic regression and path analysis, we found evidence that AP and NSP partially mediated the effects of CPA on rape and more strongly mediated the effects of CSA on rape. The fact that the direct effect of CPA on rape remained statistically significant after the two mediators were controlled suggests that other processes, beyond the two we studied, are involved in explaining the CPA–rape relationship. In contrast, there was no direct effect of CSA on rape after controlling for the mediators, which suggests that the association between CSA and rape perpetration can be substantially accounted for by the mediating effects of AP and NSP.

Our model does not provide a full accounting of the factors that predict AP, NSP, or rape perpetration. CPA and CSA accounted for only 2–3% of the variance in AP and only 4–7% of the variance in NSP across our three samples, although the full model predicted 10–14% of the variance in rape. Whereas the explanatory power of our predictors may appear modest, recall that our goal was not to predict AP, NSP, or rape; instead, our purpose was to examine the relationship (direct and mediated) between childhood abuse and rape perpetration. From this perspective, we were quite successful.

With respect to the issue of whether different forms of childhood abuse produce specific versus generalized negative effects (cf. Trickett & McBride-Chang, 1995; Widom, Weiler, & Cottler, 1999), our results provide evidence of both types of effects. In support of generalized effects of childhood abuse, CPA and CSA were both associated with AP, NSP, and rape, and the effects of both types of abuse on rape were mediated by AP and NSP. However, specificity of effects is indicated by the finding that CSA was more strongly related to NSP than CPA was and by the finding that the CPA–rape relationship was less strongly mediated by AP and NSP than the CSA–rape relationship was.

The present model needs to be replicated in other populations to establish its generality. Conclusions based on the present study are also limited by our reliance on self-report measures. First, the observed associations among our measures may have been enhanced because of shared method variance among our self-report measures. The accuracy of our measures of CPA and CSA is also constrained by the accuracy of respondents' recollections. However, to the extent that responses to these measures are distorted by social desirability and other response biases, the already high rates of rape and other negative behaviors reported by our respondents are likely to underestimate the true prevalence of these behaviors. Finally, as previously noted, our measures of CPA and CSA are likely to tap a broad range of experiences, varying widely in severity. Although there are ambiguities associated with defining and measuring abuse severity, assessment of severity-related abuse characteristics is likely to increase the precision of predictions about the consequences of both physical and sexual abuse.

The present study also has several major strengths. One is that we tested our predictions across multiple samples. Because results

were consistent across three large samples, despite some variations in variable definition and measurement, our confidence in the robustness of the effects is substantially enhanced. Moreover, by replicating some findings previously demonstrated only in sex offender and student samples in a different population—Navy recruits—the present research adds to the collective evidence for relationships between childhood abuse, AP, NSP, and male adult rape of women. Future studies should build on this research by incorporating additional mediators that may help to explain the process by which child abuse promotes a cycle of violence. In addition to increasing our understanding of an important social problem, such research may ultimately suggest practical interventions that may help to short circuit the intergenerational transmission of violence.

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